Joint Countermine ACTD
Advanced Concept Technology Demonstration

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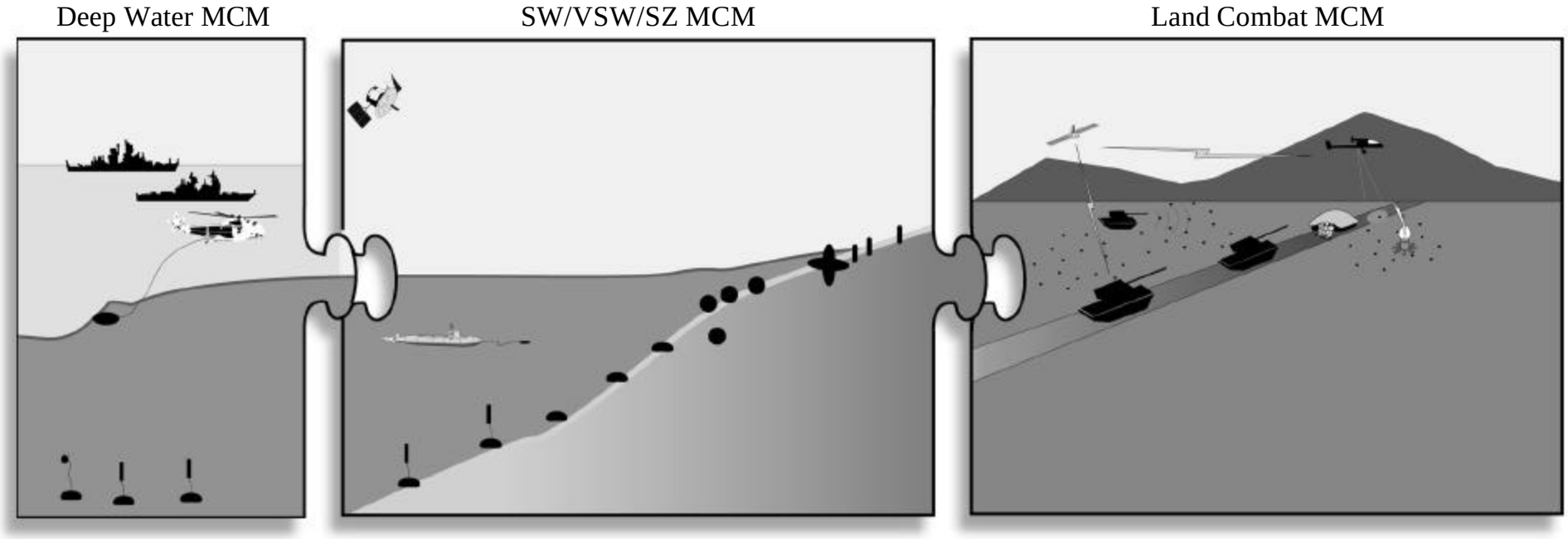
Joint Countermine ACTD Vision

Seamless Transition of Countermine Capabilities from Sea to Land Operations



Challenge:

Demonstrate the Capability to Conduct Seamless Mine Countermeasures Operations with Major Emphasis on Clandestine Reconnaissance/Surveillance from Space/Air/Surface/Subsurface Platforms.

JCM ACTD Demonstrations

Demo I: JTFEX 97–3

- Scripted, Joint Exercise
- Camp Lejeune and Fort Bragg, NC
- Showcased Near–Term, More Mature Capabilities
- 9 Systems Participated plus JCOS (M&S) and JCA (C4I)

JTFEX 98–1

- Re–Play Demo I Airfield Take–Down Vignette
- 2 Systems Participated

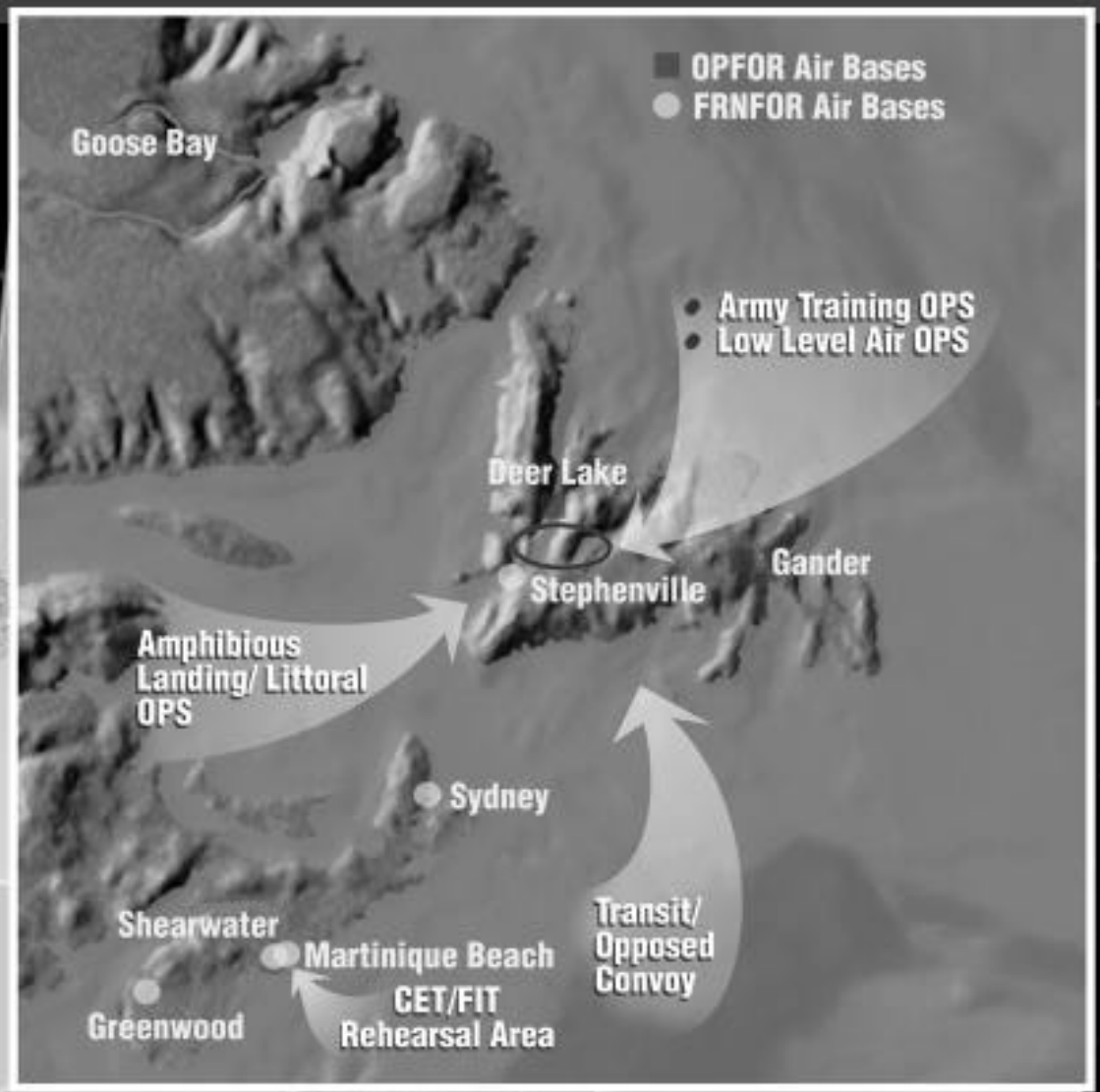
Demo II: MARCOT/Unified Spirit 98

- Freeplay Maritime Amphibious Exercise
- Near Stephenville, Newfoundland
- Emphasis:
  - Clandestine Reconnaissance
  - Integration of Novel Systems into Service CONOPs/Doctrine
  - Enhanced JCM C^4I
- 10 Systems Participated plus JCOS (M&S) and JCA (C4I)

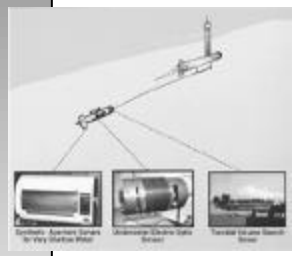
MARCOT/Unified Spirit 98

MARCOT UNIFIED SPIRIT 1998

- Amphibious Operation Includes:
  - 40+ Warships;
  - 100+ Combat A/C;
  - 2 Battalions Landing Force;
  - 15,000 Active Participants
- ↗ Significant, Integrated Mine Warfare Defenses



Demonstration II Novel Systems

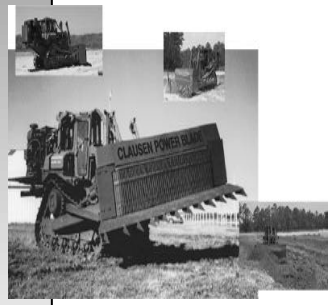


Novel System	Countermine	Technology	Demonstration Objectives
Littoral Remote Sensing (LRS)	Clandestine Surveillance and Reconnaissance Navy System	IR, Visible Imaging	➢ Fusion and dissemination of surveillance data obtained from material assets and various sensors to support operations. ➢ Provide EEI: Minelaying activities, minefields, obstacles.
Advanced Sensors	Covert Reconnaissance Navy System	TVSS, SLS, Dual Frequency SAS, EO ID Sensor, and Magnetic Gradiometer	➢ Clandestine capability to detect, classify, and identify mines from deep through shallow water.
Near-term Mine Reconnaissance System (NMRS)	 Navy System	SSN-Hosted Recoverable UUV with Multi-Beam Active Search Sonars; Side Scan Classification Sonar	➢ Capability to locate minefield gaps or lightly mined areas for approach lanes from SEA to ITA and ITA to CLZ.

Demonstration II Novel Systems (Cont'd)

Novel System	Countermine	Technology	Demonstration Objectives
Magic Lantern (Adaptation) [ML(A)]	Overt Reconnaissance Navy System	Gated Blue-Green Laser Imaging	➢ Detect minefields in shallow water, very shallow water, on the beach and inland. ➢ Find suitable CLZs.
Airborne Standoff Minefield Detection System (ASTAMIDS)	Army System	Airborne IR Imaging System	
Coastal Battlefield Reconnaissance Analysis (COBRA)	USMC System	Multi-Spectra Optical Sensor	

Demonstration II Novel Systems (Cont'd)



Novel System	Countermine	Technology	Demonstration Objectives
Advanced Lightweight Influence Sweep System (ALISS)	Breaching Navy System	Pulse Power Driven Plasma Discharge and Superconducting Magnetic Technology	➢ Sweep lanes from ITA to CLZ for follow-on forces.
Explosive Neutralization (Adv. Tech. Demo.) [EN(ATD)]	Navy System	PCS with Autonomous Craft Control, Distributed Explosive Tech.	➢ Accurately deploy explosive charges to neutralize surf zone mines and clear lanes for LCACs and AAVs.
Power Blade – D7	Congressional Mandate	Side Sweeping Blade	➢ Ability to clear lane for LCACs from high water mark to CLZ. ➢ Follow-on clearance of beach and CLZ areas.
Power Blade – D8	Clearing	Side Sweeping Blade	➢ Follow-on clearance of beach and CLZ areas.
Close-In Man Portable Mine Detector (CIMMD)	Army System	Ground Penetrating Radar and IR	➢ Detection of metallic and non-metallic mines for various countermine situations.

Military Utility Assessment

- JCM was the First Complex System of Systems ACTD
- An Approach that Blended:
  - Live Systems Data Analysis
  - Warfighter Feedback
  - Modeling and Simulation
- The Assessment of Military Utility Drove:
  - Exercise Scenario
  - Data Collection
  - C4ISR Architecture
  - Joint Countermine Operational Simulation (JCOS)

Critical Operational Issues

1. Enhance JTF countermine capability during OMFTS
2. Enhance JTF countermine command, control, planning
3. Potential to meet JTF suitability and logistics requirements
4. Enhance planning, rehearsal and analysis through M&S

Military Utility Assessment Summary

JCM ACTD - CINCUSACOM Military Utility Assessment

KEY:
PURPLE = JOINT
BLUE = USN
RED = USMC
GREEN = USA

- Significant Utility Demo'd
- Some Utility
- Minimal Utility Demonstrated

Clandestine/LO Reconnaissance

LRS
- Totally clandestine
- Novel technique w/existing technology
- Accurate, esp for surface, BZ mines
- Bathymetric value

NMRS
- Poor nav accuracy
- High false contact rate
- SSN employment
- Fiber optic tether
- No bathymetry

A/S
- No test of VSW EO-ID
- High false alarm rate
- Fouling in clutter
- RF LOS comms reqd
- No bathymetry
- Night ops

Overt Reconnaissance

ML/A
- Partial SZ/VSW success
- UAV suitability
- Bathymetric value

COBRA
- Processing time
- Large sfc mine only
- Day only
- Optical value
- UAV suitability

ASTAMIDS
- IR vs buried mines
- Processing time
- UAV suitability
- Environmentals

Sweep

ALISS
- Host platform suitability
- Contact mine survival
- Mine detonation feedback
- Night ops

Assault Breach

JAMC
- Impractically complex

ORSMC
- Unvalidated threat

PowerBlade
- Survivability
- Mobility
- Teleremote operation

EN-ATD
- Lethality unproven
- Survivability
- Unexploded ordnance
- Host platform avail
- Environmental (sea state)
- Mission Planning software

Land Clearance

ACP
- Undemonstrated (classification)

CIMMD
- Weight
- Sensory overload
- Ruggedize,
- wxproof
- Buried, non-metallic

C4I

JCA
- JMCIS dissemination
- Topo display accuracy
- Comm link reliability

M&S

JCOS
- Real time sim
- Complex setup
- Novel system data

JCM ACTD Novel System Status

Novel System	Activities				Current Status
	Demo I	Demo II	KB 99	FBE H	
LRS	✔	✔	✔	✔	Transitioned capability and continued exercise participation.
NMRS		✔			Effort restructured for LMRS risk reduction.
AS	✔	✔	✔	✔	TVSS development terminated; EOID/SAS continued testing and development.
ML(A)	✔	✔			Technology/operational lessons learned applied to ALMDS (proposed).
COBRA	✔	✔			Transitioned Program – P3I.

JCM ACTD Novel System Status

Novel System	Activities				Current Status
	Demo I	Demo II	KB 99	FBE H	
ASTAMIDS	✔	✔			Terminated as Army program; continued R&D, possible technology transfer to COBRA/P3I.
ALISS		✔	✔		Technology transitioned to OASIS program (proposed).
JAMC	✔				Terminated.
ORSMC	✔				Terminated.
Power Blade	✔	✔			Terminated.

JCM ACTD Novel System Status

Novel System	Activities				Current Status
	Demo I	Demo II	KB 99	FBE H	
EN (ATD)	✔	✔			DET/SABRE program (precursor to EN) P3I.
ACP	ACP withdrawn by Army from JCM ACTD.				
CIMMD	✔	✔			Transitioned to HSTAMIDS.
JCA	✔	✔	✔		Capability incorporated into MEDAL Build 7.0
JCOS	✔	✔	✔		Components transitioned to JSAF; continued exercise participation.

JCA

- **Assessment Results**
  - Operational planning and evaluation capability
  - Near real-time operational picture
  - Processes and distributes significant amount of MCM data
  - Dependence on high bandwidth, legacy COMMS architecture
- **Status**: Transitioning to GCCS-Engineer
  - Functionality developed and refined in partnership with XVIII Airborne Corps warfighters
    - GCCS-Eng residuals provided to 20 Eng Bde as “Go-to-War” capability
  - Current version supports a wide spectrum of Joint Combat Engineer operations
    - Manage, plot, and communicate Combat Engineer relevant data
      - Mined areas, FASCAM areas and types, MSR status, FLS status, FARP locations, Planned vs executed obstacles, NBC areas, Unit/Equipment Status, etc.

JCM ACTD Summary

- Transitions
  - JCA, JCOS, COBRA P3I, LRS, EN(ATD)
- Transitioned Technologies or Ongoing R&D
  - ML(A), ASTAMIDS, CIMMD, ALISS, AS, NMRS
- Systems terminated (lacking sufficient military utility)
  - PB, JAMC, ORSMC

JCM ACTD has had some transition success but the principle value has been to support a refocusing of effort for many systems/technologies which will, ultimately produce a better product; better performance and more suitable to the military user.

Lessons Learned

- Early Service Involvement Is Critical
  - Understand novel system's functionality
  - Develop appropriate CONOPS
- Need to Determine Current Capability
- Use Existing M & S Capabilities If at All Possible
- Live System Play Is Important - Reveals Non-modeled Phenomena
  - Environmental effects
  - Training deficiencies
  - Communications limitations